



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

OFFICE OF CHEMICAL SAFETY  
AND POLLUTION PREVENTION

May 1, 2018

Jayne Walz  
Regulatory Manager  
Valent BioSciences, LLC  
870 Technology Way  
Libertyville, IL, 60048

Subject: Non-PRIA (Pesticide Registration Improvement Act) Labeling Amendment – Removal of All Food Uses and Other Revisions to the Master Label  
Product Name: Foray 48B  
EPA Registration Number: 73049-427  
Application Date: 12/19/2016  
OPP Decision Number: 524735

Dear Ms. Walz:

The amended labeling referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended, is acceptable.

This approval does not affect any terms or conditions that were previously imposed on this registration. You continue to be subject to existing terms or conditions on your registration and any deadlines connected with them.

A stamped copy of your labeling is enclosed for your records. This labeling supersedes all previously accepted labeling. You must submit one (1) copy of the final printed labeling before you release this product for shipment with the new labeling. In accordance with 40 CFR § 152.130(c), you may distribute or sell this product under the previously approved labeling for 18 months from the date of this letter. After 18 months, you may only distribute or sell this product if it bears this new revised labeling or subsequently approved labeling. "To distribute or sell" is defined under FIFRA section 2(gg) and its implementing regulation at 40 CFR § 152.3.

Should you wish to add/retain a reference to your company's website on your label, then please be aware that the website becomes labeling under FIFRA and is subject to review by the U.S. Environmental Protection Agency (EPA). If the website is false or misleading, the product will be considered to be misbranded and sale or distribution of the product is unlawful under FIFRA section 12(a)(1)(E). 40 CFR § 156.10(a)(5) lists examples of statements the EPA may consider false or misleading. In addition, regardless of whether a website is referenced on your product's label, claims made on the website may not substantially differ from those claims approved through the registration process. Therefore, should the EPA find or if it is brought to our attention that a website contains false

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or misleading statements or claims substantially differing from the EPA-approved registration, the website will be referred to the EPA's Office of Enforcement and Compliance Assurance.

Your release for shipment of this product constitutes acceptance of these terms. If these terms are not complied with, this registration will be subject to cancellation in accordance with FIFRA section 6.

If you have any questions, please contact Elyse Bilardo by phone at (703) 347-0182 or via email at [bilardo.elyse@epa.gov](mailto:bilardo.elyse@epa.gov).

Sincerely,

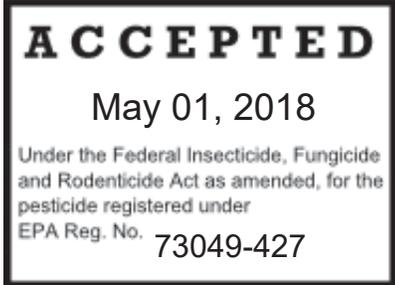
A handwritten signature in black ink, appearing to read "Jeannine Kausch" with a stylized flourish at the end.

Jeannine Kausch, Product Manager 92  
Microbial Pesticides Branch  
Biopesticides and Pollution  
Prevention Division (7511P)  
Office of Pesticide Programs

Enclosure: Stamped Label

[Text in brackets [] indicates optional language or language intended for explanatory purposes to facilitate label review. Thus, this language will often not appear on final printed labeling. Also, this page is present (page 1) to delineate sublabels and will not appear on the final printed labeling.]

**FORAY® 48B  
BIOLOGICAL INSECTICIDE  
FLOWABLE CONCENTRATE**



[Alternate Brand Name: Foray® XG]

**MASTER LABEL**

Sub-label A: Agricultural Use – Aerial and Ground Application

Sub-label B: Commercial Forestry and Wide-Area Pest Treatment Uses - Aerial Application

Sub-label C: Commercial Urban Use – Ground Only

**Active Ingredient:**

<i>Bacillus thuringiensis</i> subsp. <i>kurstaki</i> Strain ABTS-351 fermentation solids, spores, and insecticidal toxins.....	12.65%
<b>Other Ingredients</b> .....	87.35%
<b>Total</b> .....	100.00%

Potency: 10,600 Cabbage Looper Units (CLU) per mg of product (equivalent to 48 billion CLU per gallon)

The percent active ingredient does not indicate product performance and potency measurements are not federally standardized.

**EPA Registration No. 73049-427**

**EPA Est. No. 33762-IA-1**

Produced for:

Valent Biosciences LLC  
870 Technology Way  
Libertyville, IL 60048

**FORAY® 48B  
BIOLOGICAL INSECTICIDE  
FLOWABLE CONCENTRATE**

**FOR AGRICULTURAL USE ONLY - NOT FOR FOOD USE**

[SUB-LABEL A]



**For Organic Production**

**Active Ingredient:**

*Bacillus thuringiensis* subsp. *kurstaki*, Strain ABTS-351, fermentation solids, spores and insecticidal toxins .....12.62%

**Other Ingredients** .....87.35%

**Total**.....100.00%

Potency: 10,600 Cabbage Looper Units (CLU) per mg of product (equivalent to 48 billion CLU per gallon).

The percent active ingredient does not indicate product performance and potency measurements are not federally standardized.

**KEEP OUT OF REACH OF CHILDREN  
CAUTION**

Net Contents: 2.5 gallons, 55 gallons or 265 gallons

Valent BioSciences LLC  
870 Technology Way  
Libertyville, IL 60048

Lot No.:

EPA Registration No. 73049-427  
EPA Est. No. 33762-IA-1

<b>FIRST AID</b>	
<b>If in eyes</b>	<ul style="list-style-type: none"> <li>• Hold eye open and rinse slowly and gently with water for 15 - 20 minutes.</li> <li>• Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
<b>HOT LINE NUMBER</b>	
<p>Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-877-315-9819 (24 hours) for emergency medical treatment and/or transport emergency information. For all other information, call 1-800-323-9597.</p>	

## PRECAUTIONARY STATEMENTS

### HAZARDS TO HUMANS AND DOMESTIC ANIMALS CAUTION

Causes moderate eye irritation. Avoid contact with eyes or clothing. Wash thoroughly with soap and water after handling and before eating, drinking chewing gum, using tobacco or using the toilet.

#### **Personal Protective Equipment (PPE)**

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Waterproof gloves
- Shoes plus socks

Mixers/loaders and applicators must wear a NIOSH-approved particulate respirator with any R or P filter with NIOSH approval number prefix TC-84A; or a NIOSH-approved powered air purifying respirator with a HE filter with NIOSH approval number prefix TC-21C. Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization. Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization.

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

#### **Engineering Controls:**

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

**IMPORTANT:** When reduced PPE is worn because a closed system is being used, handlers must provide all PPE specified above for "applicators and other handlers" and have such PPE immediately available for use in an emergency, such as spill or equipment breakdown.

#### **User Safety Recommendations**

##### **Users should:**

- Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

## **Environmental Hazards**

### **For Ground Application:**

For Terrestrial Uses: Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment washwaters.

No manual application can take place within 300 feet of any threatened or endangered Lepidoptera.

### **For Aerial Application:**

Except under the forest canopy, do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment washwaters.

This product must not be applied aurally within ¼ mile of any habitats of threatened or endangered Lepidoptera.

## **DIRECTIONS FOR USE**

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling. Do not apply this product in a way that will contact workers or other persons either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the State or Tribal agency responsible for pesticide regulation.

### **AGRICULTURAL USE REQUIREMENTS**

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. Refer to supplemental labeling under "Agricultural Use Requirements" in the Directions For Use section for information about this standard.

Refer to the Directions For Use Booklet attached to this container for further directions.

## STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal.

**Pesticide Storage:** Store in a cool, dry place. Keep containers tightly closed when not in use. Store in temperatures above freezing and below 32° C (90° F).

**Pesticide Disposal:** To avoid wastes, use all material in this container by application according to label directions. If wastes can not be avoided, offer remaining product to a waste disposal facility or pesticide disposal program (often such programs are run by state or local governments or by industry).

### **Container Handling:**

Nonrefillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Once cleaned, some agricultural plastic pesticide containers can be taken to a container collection site or picked up for recycling. To find the nearest site, contact your chemical dealer or manufacturer, or contact Ag Container Recycling Council at 202-861-3144 or [www.acrecycle.org](http://www.acrecycle.org). If recycling is not available puncture and dispose of the container in a sanitary landfill, or by other procedures approved by state and local authorities

Refillable Container: Refill this container with pesticide only. Do not use this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times. Offer for recycling if available. Offer for reconditioning, if appropriate.

### **Warranty and Disclaimer**

To the extent permitted by applicable law, seller makes no warranty, express or implied, of merchantability, fitness or otherwise concerning the use of this product other than as indicated on the label. User assumes all risks of use, storage or handling not in strict accordance with accompanying directions

## **DIRECTIONS FOR USE BOOKLET**

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling. Do not apply this product in a way that will contact workers or other persons either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the State or Tribal agency responsible for pesticide regulation.

### **AGRICULTURAL USE REQUIREMENTS**

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted-entry interval (REI) of 4 hours.

PPE required for early entry to treated areas (that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water), is:

- Coveralls
- Waterproof gloves
- Shoes plus socks

### **APPLICATION**

Apply Foray 48B Biological Insecticide Flowable Concentrate (hereafter referred to as Foray 48B) undiluted or with quantities of water sufficient to provide thorough coverage of plant parts to be protected, by ground or aerial equipment. The amount of water needed per acre will depend upon size, weather, spray equipment, and local experience.

Do not apply this product through any type of irrigation system.

Avoiding spray drift at the application site is the responsibility of the applicator. The interactions of many equipment- and weather-related factors determine the potential for spray drift. The applicator and the grower/treatment coordinator are responsible for considering all of these factors when making decisions.

### **MIXING**

Shake or stir Foray 48B before use. Fill spray or mixing tank half full of water. Begin agitation and pour Foray 48B into water while maintaining continuous agitation. Add other spray material (if any) and balance of water. Agitate as necessary to maintain suspension. Do not allow diluted mixture to remain in the tank for more than 72 hours.

Combinations with commonly used spray tank adjuvants are generally not deleterious to Foray 48B, if the mix is used promptly. Before mixing in the spray tank, identify possible problems with physical compatibility by mixing all components in a small container in proportionate quantities. Check with an adjuvant supplier for advice on spray adjuvants that are compatible with biological pesticides such as Foray 48B to help avoid incompatibilities. "Follow the most restrictive of the labeling limitations and precautions of all products used in mixtures".

## SPRAY VOLUMES

**Ground Application:** Use amount of Foray 48B, as indicated in the tables that follow, in ground equipment with quantities of water sufficient to provide thorough coverage of plant parts to be protected. The amount of water needed per acre will depend upon size, weather conditions, spray equipment used and local experience.

Use an adequate amount of tank mix to obtain thorough coverage without excessive run off. Use the indicated per acre rates of Foray 48B in up to the following amounts of water:

High volume hydraulic sprayers	100 gallons
Mist blowers	10 gallons

For smaller spray volumes, mix the proper number of teaspoons of Foray 48B from the following chart to attain the desired rates:

<b><u>If the rate is:</u></b>	<b><u>Add this amount per gallon of mix:</u></b>
8 fl. oz. (0.5 pts.)/acre	1/2 teaspoon
16 fl. oz. (1.0 pts.)/acre	1 teaspoon
24 fl. oz. (1.5 pts.)/acre	1 1/2 teaspoons
32 fl. oz. (2.0 pts.)/acre	2 teaspoons
48 fl. oz. (3.0 pts.)/acre	3 teaspoons
64 fl. oz. (4.0 pts.)/acre	4 teaspoons
88 fl. oz. (5.5 pts.)/acre	5 1/2 teaspoons

**Aerial Application:** Use amount of Foray 48B, as indicated in the tables that follow, in aerial equipment undiluted or with quantities of water sufficient to provide thorough coverage of plant parts to be protected. In the western U.S., use a normal minimum of 5-10 gallons per acre; in the eastern regions use a normal minimum of 2-3 gallons per acre. The minimum amount of water needed per acre will depend upon size, weather conditions, spray equipment used and local experience.

## GENERAL AGRICULTURAL USE INSTRUCTIONS

Foray 48B is a biological insecticide for the control of lepidopterous larvae. It contains the spores and endotoxin crystals of *Bacillus thuringiensis kurstaki*. Foray 48B must be ingested by the larvae to be effective. For consistent control, apply at first sign of newly hatched larvae (1st and 2nd instar larvae). Susceptible larvae that ingest Foray 48B cease feeding within a few hours and die within 2-5 days.

Foray 48B may be applied up to and on the day of harvest.

For maximum effectiveness, follow the instructions listed below:

Monitor fields to detect early infestations.

Apply Foray 48B when eggs start hatching and larvae are small (early instars) and before significant damage occurs. Larvae must be actively feeding to be affected.

Repeat applications every 3 to 14 days to maintain control and protect new plant growth. Factors affecting spray interval include rate of plant growth, weather conditions, and reinfestation. Monitor populations of pests and beneficials to determine proper timing of applications. Under conditions of heavy pest pressures or when large worms are present, use the higher rate, shorten the application interval, and/or improve spray coverage to enhance control. When these conditions are present, consider use of a contact insecticide to enhance control.

Thorough coverage is essential for optimum performance. Ground applicators equipped with directed drop nozzles can improve coverage.

<b>Crop Group</b>	<b>Pest(s)</b>	<b>Rate (Pints/Acre)</b>
<b>Flowers Bedding Plants, and Ornamentals</b>  Ornamentals Flowers, Bedding Plants	Armyworms*  Azalea Moth Diamondback Moth Ello Moth (Hornworm) Io Moth Loopers Oleander Moth Omnivorous Leafroller Omnivorous Looper Tobacco Budworm	1.5 - 5.5  1.0 - 1.5
<b>Greenhouse and Outdoor Nursery</b>  Flowers	Armyworms*  <i>Heliothis zea</i> Loopers	1.5 - 5.5  1.5 - 3.0

<b>Crop Group</b>	<b>Pests</b>	<b>Rate (Pints/Acre)</b>
<b>Turf</b>	Sod Webworm	3.0-5.5
	Tropical Sod Webworm	3.0
	Armyworm*	3.0

Crop	Pests	Rate <sup>(1)</sup> (fl. oz./acre)
Forests, Shade Trees, Ornamentals, Shrubs, Sugar Maple Trees, Seed Orchards, Non-Bearing Ornamental Fruit, Nut & Citrus Trees	Gypsy Moth & Asian Gypsy Moth Elm Spanworm	21 -107
	Spruce Budworm Browntail Moth Douglas fir tussock moth Coneworm Buck moth	21 - 80
	Tussock Moths Pine Butterfly Bagworm Leafrollers Tortrix Mimosa Webworm Tent Caterpillar Jackpine Budworm Blackheaded Budworm Saddled Prominent Saddleback Caterpillar Eastern & Western Hemlock looper Orangestriped Oakworm Satin Moth	16 - 43
	Redhumped Caterpillars Spring & Fall Cankerworm California Oakworm Fall Webworm	11 - 31

**Special Instructions**

\*Armyworm Control: Use Foray 48B to control small armyworms (first and second instar) when populations are light and full coverage sprays are applied. Repeat treatment as necessary. If late instar larvae or heavy populations are present, achieve greater control by adding a contact insecticide.

\*\*Suppression Only: Use to aid in control of light to moderate populations of first and second instars in Integrated Pest Management conditions. Repeat treatments at four to five day intervals. Use an additional ovicidal or larvicidal insecticide to aid in control.

<sup>1</sup>Use the higher rates on advanced larval stages or under high density larval populations.

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**FORAY® 48B  
BIOLOGICAL INSECTICIDE  
FLOWABLE CONCENTRATE**

**For Commercial Forestry and Wide-Area Pest Treatment - Aerial Application Only**

[SUB-LABEL B]



**For Organic Production**

**Active Ingredient:**

*Bacillus thuringiensis* subsp. *kurstaki*, Strain ABTS-351, fermentation solids, spores and insecticidal toxins .....12.62%

**Other Ingredients** .....87.35%

**Total**.....100.00%

Potency: 10,600 Cabbage Looper Units (CLU) per mg of product (equivalent to 48 billion CLU per gallon).

The percent active ingredient does not indicate product performance and potency measurements are not federally standardized.

**KEEP OUT OF REACH OF CHILDREN  
CAUTION**

Net Contents: 55 gallons or 265 gallons

Produced For:  
Valent BioSciences LLC  
870 Technology Way,  
Libertyville, IL 60048

Lot No.:

EPA Registration No. 73049-427  
EPA Est. No. 33762-IA-1

<b>FIRST AID</b>	
<b>If in eyes</b>	<ul style="list-style-type: none"> <li>• Hold eye open and rinse slowly and gently with water for 15 - 20 minutes.</li> <li>• Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
<b>HOT LINE NUMBER</b>	
<p>Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-877-315-9819 (24 hours) for emergency medical treatment and/or transport emergency information. For all other information, call 1-800-323-9597</p>	

## PRECAUTIONARY STATEMENTS

### HAZARDS TO HUMANS AND DOMESTIC ANIMALS CAUTION

Causes moderate eye irritation. Avoid contact with eyes or clothing. Wash thoroughly with soap and water after handling and before eating, drinking chewing gum, using tobacco or using the toilet.

#### **Personal Protective Equipment (PPE)**

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Waterproof gloves
- Shoes plus socks

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

#### Agricultural Use Requirements:

Mixers/loaders and applicators must wear a NIOSH-approved particulate respirator with any R or P filter with NIOSH approval number prefix TC-84A; or a NIOSH-approved powered air purifying respirator with a HE filter with NIOSH approval number prefix TC-21C. Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization. Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization.

#### Engineering Control

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

**IMPORTANT:** When reduced PPE is worn because a closed system is being used, handlers must provide all PPE specified above for “applicators and other handlers” and have such PPE immediately available for use in an emergency, such as spill or equipment breakdown.

#### Non-agricultural Use Requirement:

Mixers/loaders and applicators must wear a NIOSH-approved particulate respirator with any R or P filter with NIOSH approval number prefix TC-84A; or a NIOSH-approved powered air purifying respirator with a HE filter with NIOSH approval number prefix TC-21C. Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization. Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization.

### **User Safety Recommendations**

#### **Users should:**

- Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

### **Environmental Hazards**

Except under the forest canopy, do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment washwaters.

This product must not be applied aerially within ¼ mile of any habitats of threatened or endangered Lepidoptera.

### **DIRECTIONS FOR USE**

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling. For any requirements specific to your State or Tribe, consult the State or Tribal agency responsible for pesticide regulation

### **AGRICULTURAL USE REQUIREMENTS**

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. Refer to supplemental labeling under "Agricultural Use Requirements" in the Directions For Use section for information about this standard.

Refer to the Directions For Use Booklet attached to this container for further directions.

## **STORAGE AND DISPOSAL**

Do not contaminate water, food or feed by storage or disposal.

**Pesticide Storage:** Store in a cool, dry place. Keep containers tightly closed when not in use. Store in temperatures above freezing and below 32° C (90° F).

**Pesticide Disposal:** To avoid wastes, use all material in this container by application according to label directions. If wastes can not be avoided, offer remaining product to a waste disposal facility or pesticide disposal program (often such programs are run by state or local governments or by industry).

### **Container Handling:**

Nonrefillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Offer for recycling if available. Offer for reconditioning, if appropriate.

Refillable container: Refill this container with pesticide only. Do not use this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times. Offer for recycling if available. Offer for reconditioning, if appropriate.

### **Warranty and Disclaimer**

To the extent permitted by applicable law, seller makes no warranty, express or implied, of merchantability, fitness or otherwise concerning the use of this product other than as indicated on the label. User assumes all risks of use, storage or handling not in strict accordance with accompanying directions

## DIRECTIONS FOR USE BOOKLET

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling. For any requirements specific to your State or Tribe, consult the State or Tribal agency responsible for pesticide regulation.

Apply this product only through aerial application.

### AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application.

Do not enter or allow worker entry into treated areas during the restricted-entry interval (REI) of 4 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard (that involves contact with anything that has been treated, such as plants, soil, or water) is:

- Coveralls
- Waterproof gloves
- Shoes plus socks

### NON- AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries or greenhouses.

### APPLICATION

Apply Foray 48B Biological Insecticide Flowable Concentrate (hereafter referred to as Foray 48B), undiluted or with quantities of water sufficient to provide thorough coverage of plant parts to be protected, only by aerial equipment. The amount of water needed per acre will depend upon crop size, weather, spray equipment, and local experience.

Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment-and-weather-related factors determines the potential for spray drift. The applicator and the grower/treatment coordinator are responsible for considering all of these factors when making decisions.

## HANDLING & MIXING

If Foray 48B is applied undiluted, the operator must ensure that the bulk quantity is well agitated and homogenous.

When Foray 48B is shipped by bulk tankers and transferred via a 'closed loop' mixing/loading system, the material is measured by passing through in-line flow meters directly into the aircraft, minimizing exposure to ground handling personnel.

In a similar manner, smaller containers of Foray 48B are also to be used with a 'closed-loop' mixing/loading system to minimize the potential for accidental spills and exposure of ground handling personnel.

If dilution with water is needed for full coverage, fill tank with approximately  $\frac{3}{4}$  of the water required for dilution. Begin agitation and pump Foray 48B into the water while maintaining continuous agitation. Agitate as necessary to maintain suspension. Do not allow diluted mixture to remain in the tank for more than 72 hours.

When applying a diluted spray mixture, the use of a spreader-sticker will improve the weather-fastness of the spray deposits. Add the spray adjuvant to the tank after the Foray 48B is added, and before the final volume of water is added to complete the mixture. Reduce or momentarily halt tank agitation and then add the required amount of adjuvant to the diluted mix. Use a closed-loop system to siphon the required quantity of adjuvant or pour the adjuvant into the top hatch of the tank. Once added, close tank opening, and resume agitation; add the rest of the water to complete the spray mix.

Combinations with commonly used spray tank adjuvants are generally not deleterious to Foray 48B, if the mix is used promptly. Before mixing in the spray tank, identify possible problems with physical compatibility by mixing all components in a small container in proportionate quantities. Check with an adjuvant supplier for advice on spray adjuvants that are compatible with biological pesticides such as Foray 48B to avoid incompatibilities.

## SPRAY VOLUMES

**Aerial Application:** Use appropriate amount of Foray 48B, as indicated in the tables that follow, in aerial equipment undiluted or with quantities of water sufficient to provide thorough coverage of plant parts to be protected. In the western U.S., use a normal minimum of 5-10 gallons per acre; in the eastern regions, use a normal minimum of 2-3 gallons. The minimum amount of water needed per acre will depend upon size, weather conditions, spray equipment used and local experience.

## GENERAL AGRICULTURAL USE INSTRUCTIONS

Foray 48B is a biological insecticide for the control of lepidopterous larvae. It contains the spores and endotoxin crystals of *Bacillus thuringiensis kurstaki*. Foray 48B must be ingested by the larvae to be effective. For consistent control, apply at first sign of newly hatched larvae (1st and 2nd instar larvae). Susceptible larvae that ingest Foray 48B cease feeding within a few hours and die within 2-5 days.

Foray 48B may be applied up to and on the day of harvest.

For maximum effectiveness, follow the instructions listed below:

Monitor fields to detect early infestations.

Apply Foray 48B when eggs start hatching and larvae are small (early instars) and before significant damage occurs. Larvae must be actively feeding to be affected.

Repeat applications every 3 to 14 days to maintain control and protect new plant growth. Factors affecting spray interval include rate of plant growth, weather conditions, and reinfestation. Monitor populations of pests and beneficials to determine proper timing of applications.

Under conditions of heavy pest pressures or when large worms are present use the higher rate, shorten the application interval, and/or improve spray coverage to enhance control. When these conditions are present, consider use of contact insecticide to enhance control.

Thorough coverage is essential for optimum performance.

Crop	Pests	Rate <sup>(1)</sup> (fl.oz./acre)
Forests, Shade Trees, Ornamentals, Shrubs, Sugar Maple Trees, Seed Orchards, Non-Bearing Ornamental Fruit, Nut & Citrus Trees	Gypsy Moth & Asian Gypsy Moth Elm Spanworm	21 -107
	Spruce Budworm Browntail Moth Douglas fir tussock moth Coneworm Buck moth	21 - 80
	Tussock Moths Pine Butterfly Bagworm Leafrollers Tortrix Mimosa Webworm Tent Caterpillar Jackpine Budworm Blackheaded Budworm Saddled Prominent Saddleback Caterpillar Eastern & Western Hemlock looper Orangestriped Oakworm Satin Moth	16 - 43
	Redhumped Caterpillars Spring & Fall Cankerworm California Oakworm Fall Webworm	11 - 31

**Special Instructions:**

<sup>1</sup>Use the higher rates on advanced larval stages or under high density larval populations.

Use and mix this product with other pesticides only in accordance with the most restrictive of label limitations and precautions. Do not mix this product with any product containing a label prohibition against such mixing. Do not exceed label dosage rates.

**GENERAL NON-AGRICULTURAL USE INSTRUCTIONS**

Not for use on plants being grown for sale or other commercial use, or for commercial seed production, or for research purposes. For use on plants intended for aesthetic purposes or climatic modification and being grown in ornamental gardens or parks, or on golf courses or lawns and grounds.

Not for use on trees being grown for sale or other commercial use, or for commercial seed production, or for the production of timber or wood products, or for research purposes except wide-area public pest control programs sponsored by government entities, such as mosquito abatement, gypsy moth control, and Mediterranean fruit fly eradication.

Foray 48B contains the spores and endotoxin crystals of *Bacillus thuringiensis kurstaki*. Foray 48B is a stomach poison and is effective against lepidopterous larvae. After ingestion, larvae stop feeding within hours and die 2-5 days later. Maximum activity is exhibited against early instar larvae. Apply Foray 48B only by aerial application.

Use Foray 48B with a 'closed-loop' mixing/loading system that will minimize the potential for accidental spills and exposure of ground handling personnel.

If dilution with water is needed for full coverage, fill tank with approximately  $\frac{3}{4}$  of the water required for dilution. Begin agitation and pump Foray 48B into the water while maintaining continuous agitation. Agitate as necessary to maintain suspension. Do not allow diluted mixture to remain in the tank for more than 72 hours.

Monitor to detect early infestations.

Crop	Pests	Rate <sup>(1)</sup> (fl.oz./acre)
Forests, Shade Trees, Ornamentals, Shrubs, Sugar Maple Trees, Seed Orchards, Non-Bearing Ornamental Fruit, Nut & Citrus Trees	Gypsy Moth & Asian Gypsy Moth Elm Spanworm	21 - 107
	Spruce Budworm Browntail Moth Douglas fir tussock moth Coneworm Buck moth	21 - 80
	Tussock Moths Pine Butterfly Bagworm Leafrollers Tortrix Mimosa Webworm Tent Caterpillar Jackpine Budworm Blackheaded Budworm Saddled Prominent Saddleback Caterpillar Eastern & Western Hemlock looper Orangestriped Oakworm Satin Moth	16 - 43
	Redhumped Caterpillars Spring & Fall Cankerworm California Oakworm Fall Webworm	11 - 31

**Special Instructions:**

<sup>1</sup>Use the higher rates on advanced larval stages or under high density larval populations.

Use and mix this product with other pesticides only in accordance with the most restrictive of label limitations and precautions. Do not mix this product with any product containing a label prohibition against such mixing. Do not exceed label dosage rates.

**Aerial Application**

Apply Foray 48B, either alone or diluted with water, aerially at the rates per acre shown in the application rates table. Spray volumes of 32-107 fluid ounces of product per acre give optimum coverage. Best results are expected when Foray 48B is applied to dry foliage.

For smaller spray volumes, mix the proper number of teaspoons of Foray 48B from the following chart to attain the desired rates:

<b>If the rate is:</b>	<b>Add this amount per gallon of mix:</b>
8 fl. oz. (0.5 pt.)/acre	1/2 teaspoon
16 fl. oz. (1.0 pts)/acre	1 teaspoon
24 fl. oz. (1.5 pts.)/acre	1 1/2 teaspoons
32 fl. oz. (2.0 pts.)/acre	2 teaspoons
48 fl. oz. (3.0 pts.)/acre	3 teaspoons
64 fl. oz. (4.0 pts.)/acre	4 teaspoons

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**FORAY 48B  
BIOLOGICAL INSECTICIDE  
FLOWABLE CONCENTRATE**

[Alternate brand name: **FORAY® XG BIOLOGICAL INSECTICIDE FLOWABLE  
CONCENTRATE**]

**Commercial Urban Use— Ground Application**

[SUB-LABEL C]



**For Organic Production**

**Active Ingredient:**

*Bacillus thuringiensis* subsp. *kurstaki*, Strain ABTS-351, fermentation solids, spores and insecticidal toxins .....12.65%

**Other Ingredients** .....87.35%

**Total**.....100.00%

Potency: 10,600 Cabbage Looper Units (CLU) per mg of product (equivalent to 48 billion CLU per gallon).

The percent active ingredient does not indicate product performance and potency measurements are not federally standardized.

**KEEP OUT OF REACH OF CHILDREN  
CAUTION**

Net Contents: 2.5 gallons

Produced For:

Valent BioSciences LLC  
870 Technology Way  
Libertyville, IL 60048

Lot No.:

EPA Registration No. 73049-427

EPA Est. No. 33762-IA-1

<b>FIRST AID</b>	
<b>If in eyes</b>	<ul style="list-style-type: none"> <li>• Hold eye open and rinse slowly and gently with water for 15 - 20 minutes.</li> <li>• Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
<b>HOT LINE NUMBER</b>	
<p>Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-877-315-9819 (24 hours) for emergency medical treatment and/or transport emergency information. For all other information, call 1-800-323-9597</p>	

## PRECAUTIONARY STATEMENTS

### HAZARDS TO HUMANS AND DOMESTIC ANIMALS CAUTION

Causes moderate eye irritation. Avoid contact with eyes or clothing. Wash thoroughly with soap and water after handling and before eating, drinking chewing gum, using tobacco or using the toilet.

#### **Personal Protective Equipment (PPE)**

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Waterproof gloves
- Shoes plus socks

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

Non-agricultural Use Requirements:

Mixers/loaders and applicators must wear a NIOSH-approved particulate respirator with any R or P filter with NIOSH approval number prefix TC-84A; or a NIOSH-approved powered air purifying respirator with a HE filter with NIOSH approval number prefix TC-21C. Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization. Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization.

#### **User Safety Recommendations**

##### **Users should:**

- Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

#### **Environmental Hazards**

For Terrestrial Uses: Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment washwaters.

No manual application can take place within 300 feet of any threatened or endangered Lepidoptera.

#### **DIRECTIONS FOR USE**

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling. Do not apply this product in a way that will contact workers or other persons either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the State or Tribal agency responsible for pesticide regulation.

## NON- AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries or greenhouses.

Exposure of unprotected persons can be mitigated by directed spraying. Spray should be allowed to dry undisturbed.

### General Non-Agricultural Use Instructions

Not for use on plants being grown for sale or other commercial use, or for commercial seed production, or for research purposes. For use on plants intended for aesthetic purposes or climatic modification and being grown in interior plantscapes, ornamental gardens or parks, or on golf courses or lawns and grounds.

Not for use on trees being grown for sale or other commercial use, or for commercial seed production, or for the production of timber or wood products, or for research purposes except wide-area public pest control programs sponsored by government entities, such as mosquito abatement, gypsy moth control, and Mediterranean fruit fly eradication.

Foray 48B Biological Insecticide Flowable Concentrate (hereafter referred to as Foray 48B) contains the spores and endotoxin crystals of *Bacillus thuringiensis kurstaki*. Foray 48B is a stomach poison and is effective against lepidopterous larvae. After ingestion, larvae stop feeding within hours and die 2-5 days later. Maximum activity is exhibited against early instar larvae. Before use, shake or stir the product. Add some water to the tank mix, pour the required amount of Foray 48B into the tank and then add the remaining amount of water to obtain the proper mix ratio. Agitate as necessary to maintain the suspension. Use the diluted mix within 72 hours.

Monitor fields to detect early infestations.

Apply Foray 48B when eggs start hatching and larvae are small (early instars) and before significant damage occurs. Larvae must be actively feeding to be affected.

Repeat applications every 3 to 14 days to maintain control and protect new plant growth. Factors affecting spray interval include rate of plant growth, weather conditions, and reinfestation. Monitor populations of pests and beneficials to determine proper timing of applications. Under conditions of heavy pest pressures or when large worms are present, use the higher rate, shorten the application interval, and/or improve spray coverage to enhance control. When these conditions are present, consider use of a contact insecticide to enhance control.

Thorough coverage is essential for optimum performance. Ground applicators equipped with directed drop nozzles can improve coverage.

<b>Crop</b>	<b>Pests</b>	<b>Rate<sup>(1)</sup> (fl. oz./1000 ft<sup>2</sup>)</b>
Forest and Shade Trees, Ornamentals, Shrubs, Sugar Maple Trees, Seed Orchards, Non-Bearing Ornamental Fruit, Nut & Citrus Trees	Gypsy Moth & Asian Gypsy Moth Elm Spanworm	0.5 - 2.5
	Spruce Budworm Browntail Moth Douglas fir tussock moth Coneworm Buck moth	0.5 - 1.9
	Tussock Moths Pine Butterfly Bagworm Leafrollers Tortrix Mimosa Webworm Tent Caterpillar Jackpine Budworm Blackheaded Budworm Saddled Prominent Saddleback Caterpillar Eastern & Western Hemlock looper Orangestriped Oakworm Satin Moth	0.3 - 1.0
	Redhumped Caterpillars Spring & Fall Cankerworm California Oakworm Fall Webworm	0.25 - 0.75

<b>Crop</b>	<b>Pests</b>	<b>Rate<sup>(1)</sup> (fl. oz./1000 ft<sup>2</sup>)</b>
Ornamentals Flowers, Bedding Plants	Armyworms*	0.5 - 1.8
	Azalea Moth Diamondback Moth Ello Moth (Hornworm) Io Moth Loopers Oleander Moth Omnivorous Leafroller Omnivorous Looper Tobacco Budworm	0.3 - 0.5

## APPLICATION

Apply Foray 48B undiluted or with quantities of water sufficient to provide thorough coverage of plant parts to be protected. The amount of water needed per acre will depend upon crop size, weather, spray equipment, and local experience.

Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment-and-weather-related factors determines the potential for spray drift. The applicator and the grower/treatment coordinator are responsible for considering all of these factors when making decisions.

## MIXING

Shake or stir Foray 48B before use. If dilution is desired fill spray or mixing tank with half of the desired water. Begin agitation and pour Foray 48B into water while maintaining continuous agitation. Add other spray material (if any) and balance of water. Agitate as necessary to maintain suspension. Do not allow diluted mixture to remain in the tank for more than 72 hours.

Combinations with commonly used spray tank adjuvants are generally not deleterious to Foray 48B, if the mix is used promptly. Before mixing in the spray tank, identify possible problems with physical compatibility by mixing all components in a small container in proportionate quantities. Check with an adjuvant supplier for advice on spray adjuvants that are compatible with biological pesticides such as Foray 48B to help avoid incompatibilities.

## SPRAY VOLUMES

**Ground Application:** Use amount of Foray 48B, as indicated in the application tables, in ground equipment with quantities of water sufficient to provide thorough coverage of plant parts to be protected. The amount of water needed per acre will depend upon size, weather conditions, spray equipment used and local experience.

Use an adequate amount of tank mix to obtain thorough coverage without excessive run off. Use the indicated per acre rates of Foray 48B in up to the following amounts of water:

High volume hydraulic sprayers	100 gallons
Mist blowers	10 gallons

For smaller spray volumes, mix the proper number of teaspoons of Foray 48B from the following chart to attain the desired rates:

<b>If the rate is:</b>	<b>Add this amount per gallon of mix:</b>
0.15 fl. oz./1000 ft.	1/2 teaspoon
0.3 fl. oz./1000 ft.	1 teaspoon
0.5 fl. oz./1000 ft.	1 1/2 teaspoons
1.0 fl. oz./1000 ft.	3 teaspoons
1.3 fl. oz./1000 ft.	4 teaspoons
1.8 fl. oz./1000 ft.	5 1/2 teaspoons

## STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal.

**Pesticide Storage:** Store in a cool, dry place. Keep containers tightly closed when not in use. Store in temperatures above freezing and below 32° C (90° F).

**Pesticide Disposal:** To avoid wastes, use all material in this container by application according to label directions. If wastes can not be avoided, offer remaining product to a waste disposal facility or pesticide disposal program (often such programs are run by state or local governments or by industry).

**Container Handling:** Nonrefillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Once cleaned, some agricultural plastic pesticide containers can be taken to a container collection site or picked up for recycling. To find the nearest site, contact your chemical dealer or manufacturer, or contact Ag Container Recycling Council at 202-861-3144 or [www.acrecycle.org](http://www.acrecycle.org). If recycling is not available puncture and dispose of the container in a sanitary landfill, or by other procedures approved by state and local authorities

### Warranty and Disclaimer

To the extent permitted by applicable law, seller makes no warranty, express or implied, of merchantability, fitness or otherwise concerning the use of this product other than as indicated on the label. User assumes all risks of use, storage or handling not in strict accordance with accompanying directions

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